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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/695,484

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Dennis D. McCrady

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EXAMINER

CORRIELUS, JEAN B

ART UNIT

PAPER NUMBER

2611

DATE MAILED: 10/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/695,484

Applicant(s)

MCCRADY, DENNIS D.

Examiner

Jean B. Corrielus

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-11, 16-26 and 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Awater US Patent No. 6,175,551 in view of Greenwood et al US patent No. 6,598,200.

As per claim 1, Awater discloses a method and apparatus fig. 4 comprising a processor (24 26 and 28) that generates a digital time-domain signal see output of element 28; circuit element 56 considered as the claimed "non-contiguous spectrum selector" that converts the digital time-domain signal "output of element 28" to a frequency-domain signal see output of element 58, excises a portion of the frequency-domain signal corresponding to the at least one segment of frequency spectrum see output of the filter 60 and col. 5, lines 2-4, and converts the excised frequency-domain signal to an excised time-domain signal see output of transformer 62; and a digital-to-analog converter 36 that converts the excised frequency domain signal to an analog signal for transmission. However, Awater does not teach that the signal include non-continuous frequency bands it only teaches that the signal is an OFDM signal see col.

5. As evidence by Greenwood, col. 1, line 61-col. 2, line 20, it is well known in the art to format the OFDM frequency spectrum as a non-continuous frequency spectrum by

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adaptively selecting which subcarriers are to be activated and which are not. Given that fact, it would have been obvious to one skill in the art to format the OFDM frequency spectrum of Awater as a non-continuous frequency spectrum so as to avoid mutual interference see Greenwood col. 2, lines 17-18.

As per claim 2, Awater further teaches that circuit 56 (the non-contiguous spectrum selector) comprises: a discrete Fourier transform module 58 that converts the digital time-domain signal to the frequency-domain signal, wherein the frequency-domain signal comprises a plurality of frequency-domain samples corresponding to respective frequency bins; a filter 60 (excision module) that selectively removes frequency bins to cause spectral nulling at the at least one segment of frequency spectrum excluded from signal transmission see col. 5, lines 2-4; and an inverse discrete Fourier transform module 62 that converts the excised frequency-domain signal to the excised time-domain signal.

As per claim 3, see claim 2.

As per claim 4, Awater further teaches windowing device 30 to shape the frequency response of the frequency bins.

As per claim 5, the digital time signal (output of element 28) is inherently a baseband signal as the signal is generated at the baseband level.

As per claim 6, it is well known in the art to include a digital mixer in transmit chain to upconvert a digital signal into an IF signal. Given that, it would have been obvious to one skill in the art to incorporate a digital mixer in Awater in order to convert the baseband signal into a format suitable for transmission.

As per claim 7, it would have been obvious to one skill in the art to couple a filter to the output of the digital to analog converter in order to remove residual error from the analog signal for enhancing signal reconstruction.

As per claim 8, the signal is a spread spectrum signal see col. 4, lines 40-45.

As per claim 9, the time domain signal inherently has to include a plurality of samples chips because the signal is a spread spectrum signal.

As per claim 10, Awater teaches that the transmitter fig. 4 transmit data to a remote communication device see col. 4, lines 24-26.

As per claim 11, it is well known in the art to transmit a range waveform from a transmitter to a receiver to determine the range between the receiver and transmitter. Given that, it would have been obvious to one skill in the art to incorporate such a teaching in Awater in order determine other signal parameter such as transmission power so as to enhance signal transmission between the transmitter and receiver.

As per claim 16, it would have been obvious to one skill in the art to configure the receiver and the transmitter as a modem device so as to provide distinct channel to receive and transmit communication signals.

As per claim 17, Awater teaches that the system comprises a communication device (transmitter) that includes the processor (24, 26 and 28), the circuit 56 (non-contiguous spectrum selector) and the digital to analog converter 36.

As per claim 18, the communication device is a mobile device see fig. 4.

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As per claim 19, Awater teaches that fig. 4 communicates with a receiver see col. 4, lines 24-26. Hence the system includes a plurality of communication devices i.e., transmitter communicating with a receiver in a network

As per claim 20, see claim 1.

As per claim 21, see claim 2.

As per claim 22, see claim 5.

As per claim 23, see claim 6.

As per claim 24, see claim 9.

As per claim 25, see claim 10.

As per claim 26, see claim 6.

As per claim 29, Awater does not teach that the excise portion of the frequency spectrum is independent of a signal level. Greenwood teaches that the excise portion of the frequency spectrum is independent of a signal level see col. 1, line 61-col. 2, line 20. Given that fact, it would have been obvious to one skill in the art to incorporate such a teaching in Awater and the motivation would have been the same as provided above with respect to claim 1.

As per claim 30 Greenwood suggests at col. 1, line 61-col. 2, line 20 after selectively turning off selected carriers the overall frequency spectrum of Greenwood has to extend from lowest frequency to highest frequency. Given that fact it would have been obvious to one skill in the art to modify Awater as such and the motivation would have been the same as provided above with respect to claim 1.

As per claim 31, see claim 29.

As per claim 32 see claim 30.

3. Claims 12-15, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Awater US Patent No. 6,175,551 in view of Greenwood et al US patent No. 6,598,200 and further in view of Wade US patent No. 5,263,048.

As per claim 12, as applied to claim 1 above, Awater and Greenwood teach substantially every feature of the claimed invention in addition it Awater further teaches that a receiver is used in connection with the transmitter see col. 4, lines 24-26 but fail to explicitly teach the receiver comprising an analog-to-digital converter that converts a received signal to a received digital time-domain signal; and a receiver spectrum selector that converts the received digital time-domain signal to a received frequency-domain signal, excises a portion of the received frequency-domain signal corresponding to the at least one segment of frequency spectrum, and converts the excised received frequency-domain signal to an excised, received time-domain signal. Wade teaches a receiver fig. 3 comprising an analog-to-digital converter 12 that converts a received signal to a received digital time-domain signal; and circuit 10 ( receiver spectrum selector) that converts the received digital time-domain signal to a received frequency-domain signal see output of the processor 20, excises a portion of the received frequency-domain signal corresponding to the at least one segment of frequency spectrum see output of circuit 22, and converts the excised received frequency-domain signal to an excised, received time-domain signal see output of processor 24. Given that fact, it would have been obvious to one skill in the art to incorporate such a

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teaching in Awater and Greenwood in order to provide proper means to received and process the transmitted signal so as to recover the original signal.

As per claim 13, it is well know in the art to include a time of arrival processor in a receiver. Given that it would have been obvious to one skill in the art to include such a device in Awater and Greenwood in order to determine other signal parameter such as signal velocity so as to enhance signal transmission between the transmitter and receiver.

As per claim 14, it is well known in the art to incorporate an acquisition processor in a receiver for signal acquisition. Given that, it would have been obvious to one skill in the art to incorporate such a processor in Awater and Greenwood in order to enhance reconstruction of the original signal .

As per claim 15 Wade teaches that circuit 22 (the receiver spectrum selector) performs interference excision it would have been obvious to one skill in the art to incorporate such a teaching in Awater and Greenwood and the reason to do so would have been to remove interference from the received signal so as to enhance signal detection.

As per claim 27, see claim 12

As per claim 28, see claim 13.

### ***Claim Objections***

4. The objection to claim 17 has been withdrawn.

### ***Response to Arguments***



5. Applicant's arguments filed 8/31/06 have been fully considered but they are not persuasive. It is alleged that Awater does not excise a portion of the frequency domain signal that separates non-contiguous bands. However, such limitation is not clearly recited in the claim.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B. Corrielus whose telephone number is 571-272-3020.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Jean B Corrielus  
Primary Examiner  
Art Unit 2611

9-28-06